Course: Linguistics 307 (Introduction to Linguistic Modeling)

CRN 23431

Schedule: T-TH

Professor: Dr. Mark Gibson

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Description

The objective of any scientific endeavor is to discover relationships between variables in order to understand the processes involved in generating patterns. In speech, linguists have access to the outcome of these processes, but it is up to us to discover which cognitive, linguistic and external variables conspire to shape these outputs and to make inferences about the data generating processes. The objective of the present course is to introduce the student to the basic principles of statistical modeling in order to better understand the processes which underlie language production.

Coursework

The coursework for the class involves readings from the texts, external articles, and practical exercises in basic statistics and modeling using Excel, SPSS and R. The final project is a video project in which students must choose a process to model, collect the data and model it accordingly.

Learning Outcomes and Objectives

- At the end of the course, students will be able to:
- Understand the basic principles underlying statistical modeling.
- Understand the relationship between statistics and probabilities.
- Collect data and decide which type of statistical analysis/model is most appropriate.
- Find relationships between variables.
- Understand the Data Generating Process.

Course texts:

- *Stistical Modeling and Inference for Social Science, (2014).* Sean Gaelmard. Cambridge University Press.
- *Multilevel Modeling Using R (2014).* Finch, W.H., Bolin, J.E., Kelley, K. CRC Press.

Resources to download:

Praat is a computer program that allows you to see sounds on a spectrogram in order to analyze the acoustic properties of speech. We will do many exercises with this program and it can be downloaded for free at the following website.

http://www.fon.hum.uva.nl/praat/

Methodology:

The course will be taught using a mixture of short lectures, in-class exercises, discussions, debates and group activities.

Assessment of skills acquired:

- Students will complete a number of small exercises to improve understanding of concepts and practice using phonetic analysis software (Praat)/exercises from the text (30%).
- A video project which will include collection and analysis of "field" data, as well as a final report presented on video (20%).
- Short exams and quizzes related to the theoretical topics in text (20%).
- Midterm Exam (15%)
- Final Exam (15%)

Deadline Policy

Homework and essays done outside of class are due **in class** on the date stipulated. **Do not send it to me by email**. No work is accepted late. Even if it's not finished, I prefer you to hand it in undone so you can receive partial credit for the assignment. Late work receives a 50% reduction (i.e. automatic failure of assignment). Work done in class may also be collected from time to time. If the student misses class that day, unless justified by the proper means, the student may not receive credit for the day's assignment.

Academic Honesty:

Academic dishonesty **will not be tolerated**. The aim of education is the pursuit of knowledge. Acts of academic dishonesty are contrary to that mission, and violate the **Honor Code** of Rice University. For questions regarding the Honor Code at Rice, please see the following link:

https://futureowls.rice.edu/futureowls/Honor_Code.asp

The following is a partial list of acts generally considered to be dishonest:

- Plagiarizing or representing the words, ideas or information of another person as one's own and not offering proper documentation;
- Giving or receiving, prior to an examination, any unauthorized information concerning the content of that examination;
- Referring to or displaying any unauthorized materials inside or outside of the examination room during the course of an examination, unless otherwise indicated by the professor;
- Communicating during an examination in any manner with any unauthorized person concerning the examination or any part of it;
- Giving or receiving substantive aid during the course of an examination unless otherwise stated by the professor;
- Commencing an examination before the stipulated time or continuing to work on an examination after the announced conclusion of the examination period;
- Taking, converting, concealing, defacing, damaging or destroying any property related to the preparation or completion of assignments, research or examination;
- Submitting the same written work to fulfill the requirements for more than one course.

Violations of academic dishonesty will be turned over to the Honor Code committee.

Students with documented disabilities:

Any student with a documented disability seeking academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All such discussions will remain as confidential as possible. Students with disabilities will need to also contact Disability Support Services in the Allen Center.

Schedule:

Week	Topic	Course work	Learning Objectives	Linguistic Process
Week 1 Week 2 Week 3	Descriptive Statistics	-Chapter 2 Stat. Mod. -R chapter 6 (plotting data).	-Means -Medians -Least Square Means -Standard Deviation -Relative Standard deviation	Language attitudes and Prestige dialects.
Week 4 Week 5 Week 6	Data Generating Process	Chapter 3 Stat. Mod.	-Relations between variables -Uncertainty -Stochastic Data -Generating Processes	Final 'g' dropping.
Week 7 Week 8 Week 9	Probabilities and variance	Chapter 4 Stat. Mod.	-Random factors -Fixed factors -Independent variables -Dependent variables -Comparing variance (ANOVA, t-tests)	Politeness and Pitch
Week 10 Week 11 Week 12	Inference about DGP Linear Models	-Chapter 5. Stat. Mod. -R chapter 1	-Linear vs. non-linear relationships	Consonant duration as a function of syllabic position.
Week 13 Week 14 Week 15	Multilevel Models Linear Mixed Effects models	-R chapters 2-4	-Predictors -Random factors -Maximum Likelihood Ratio (X^2 tests)	Intonation as a function of speaker attitude.